

Understanding Health Information Needs, Sources and Barriers to Accessing Information among Professional Nurses in the Western Cape

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Abstract

Introduction: Access to the best available scientific evidence-based health information enables healthcare professionals (HCPs) to make sound decisions when providing healthcare. However, barriers exist to meeting the information needs of HCPs, such as lack of time, lack of knowledge and skills, and lack of resources.

Aim: This study aimed to understand the health information needs, sources and barriers to accessing information among professional nurses in the Western Cape.

Methods: An exploratory and descriptive qualitative research design was utilised. Seventeen (N=17) professional nurses were selected from primary healthcare facilities in the Cape Town Metropole of the Western Cape, South Africa, using purposive sampling. Individual semi-structured interviews were conducted, transcribed and analysed using a six-step method of qualitative data analysis.

Findings: Three themes and eight subthemes emerged from the data, the three main themes being meeting the information needs of professional nurses, information sources and sharing of patient information, and barriers to accessing information. The findings revealed that professional nurses require daily health information about the diagnosis of patients. Sources of information used were electronic, print and colleagues. Despite the availability of computers in most



facilities, most participants used printed media as a source of information. Barriers to the use of electronic sources were personal such as skills, and organisational factors (access to technology, time and workload).

Conclusions: The study recommends providing in-service training on digital health for all professional nurses, including how to search for evidence-based information from health databases. Nursing informatics could be incorporated into all nursing training curricula. All primary healthcare facilities should provide nurses with access to computer technology and have free Wi-Fi for accessing applications. Patient health information pamphlets should be made available to all facilities and be printed in the most common language used in the geographical area.

Keywords: professional nurses; health information needs; health information sources; health information barriers

Introduction

Understanding health information needs and barriers to accessing such information is crucial for improving patient care and outcomes (Snäll, 2022). Addressing these health information needs and barriers can lead to nurses managing patients better and reduced health risk (World Health Organization, 2021). Health information needs may include information demands or requirements and information wants or desires at a certain point in healthcare (Prakasan, 2013). Health information is defined as the types of evidence-based information that healthcare professionals (HCPs) need in their daily clinical work. Information needs often differ according to the roles and positions of HCPs; for example, HCPs are more interested in practical knowledge, while health departments need aggregate data for programme planning (Barr-Walker, 2017; March et al., 2020). Information needs in this study refers to the information that is specifically required by HCPs in delivering patient care and educating the general public about their current health.

When an information need is experienced, it is followed by information seeking and subsequent action (Fourie & Bakker, 2016). The information-seeking behaviour of health professionals is determined by sociodemographic characteristics, institutional and technological factors, and information needs (Kostagiolas et al., 2018). The sociodemographic characteristics include the age of the health professional, sex, work experiences, level of education, and profession (Gama et al., 2022). Institutional factors are workload, information exchange, communication channels, information guidelines, resources, and data sources (Odekunle et al., 2017). In the last decade there has been important technological advancement in the healthcare field, which made relevant evidence-based health information available to healthcare practitioners (Thimbleby, 2023). In spite of the remarkable technological progress, little has been achieved in meeting the information needs of HCPs in developing countries (Razak et al., 2022). In many developing countries there are difficulties in obtaining reliable and accurate health-related information (Koumamba et al., 2021). Also, despite the availability of

research-based information in health databases with the potential to improve nursing care quality, nurses often do not use the research findings in their practice (Erick & Kasamani, 2015). Nurses gather information from a variety of sources, but in most cases they rely on colleagues who have more experience (Fossum et al., 2021).

Studies have revealed that in developing countries, including South Africa, nurses have unmet information needs while delivering care to patients. Several factors contribute to these unmet information needs, such as lack of internet connectivity in many areas or limited access to the internet in healthcare services, lack of resources for the distribution of internet technology and computer devices, and insufficient staffing (Gama et al., 2022; Gaughan et al., 2022). Other challenges regarding health information are the knowledge base of HCPs' awareness of health information sources (Turner et al., 2014). Information needs are also associated with the costs of locating information, such as the time, effort, and financial costs involved (Odekunle et al., 2017).

Information needs differ greatly, depending on the respondent's position and professional role in the health facility (Kostagiolas et al., 2018). In a study by Gama et al. (2022), health department directors, nursing supervisors, and clinical nurse specialists all had desktop computers with internet access. Nurses' access to and use of computer technology is associated with their position or specialist area of healthcare provision; for example, nurses working in HIV and tuberculosis have computers to record patient information (Tengeh & Bimerew, 2022).

Gama et al. (2022) and Cohen et al. (2020) identified the unmet information needs of the clinical team during delivery of care to patients with complex conditions, which include limited access to the internet and e-databases and lack of information literacy skills. Most studies have focused on the health information needs of patients, while only a few have examined the information needs of primary healthcare nurses, and how and where they gather information and use such information in clinical practice. As the result, little is known about primary healthcare nurses' information needs during healthcare delivery, and what the sources of information are to inform their clinical practice. This study therefore explored primary healthcare nurses' information needs, sources, and barriers to accessing information in clinical practice.

The specific aim of this study was to understand the health information needs, sources, and barriers to access to information among HCPs in the Western Cape. The objectives were to: 1) explore the information needs of HCPs when providing healthcare services; 2) explore the sources of information used by HCPs when providing healthcare services; and 3) describe barriers that prevent HCPs from accessing information when providing healthcare services.

Methods

An exploratory and descriptive qualitative research design was utilised to explore the information needs, sources, and barriers to access to information that informs the nurses' clinical practice. The design allowed a deeper delving into understanding the phenomenon within its natural context, and to gain understanding of the subjective interpretations and experiences of the participants (Burns & Grove, 2009; Polit & Beck, 2018).

Study setting

The study was conducted at five community healthcare centres (CHCs), and three community daycare centres (CDCs). In the Cape Town metropole area, one CDC serves between 30,000 and 60,000 members of the population, and one CHC serves a population of up to 90,000. The CDC provides eight hours of service per day from Monday to Friday, while the CHC provides 24-hour services for seven days a week. Both CDCs and CHCs provide services on disease prevention, health education, and women's health (which includes family planning and antenatal care), and integrated chronic disease management, including non-communicable and communicable diseases and mental health services, antiretroviral services, minor surgical procedures (including medical male circumcision), dietetics, chronic medicine collection, oral health, wound care, dermatology, and pharmacy services.

Population and sampling

A study population is a group of people with particular characteristics who may be selected for the specific purposes of a study (Brink et al., 2018; Gray et al., 2017). Professional nurses working at the primary care departments within the five CHCs and three CDCs were selected for this study. Inclusion criteria for the professional nurses was that they must have had either a degree Bachelor of Science in Nursing (BSN- Registered Nurse) or Diploma in nursing (Registered Nurse). Throughout the texts interviewees are referred to as nurses or professional nurses. The intended sample size was 21 nurses. Participants were purposively selected to take part in individual semi-structured interviews. Purposive sampling is used to select participants who meet specific criteria, to ensure selected participants have the necessary knowledge and experiences to provide relevant and sufficient information.

Data collection process

In-person individual interviews were conducted in English by a research assistant who is experienced in conducting qualitative research interviews. English was used as it is the language used for documentation at the respective facilities. The facility managers of each CHC or CDC were contacted for permission to meet the participants of the study. An appointment was made to meet and decide on the interview place and time. The interviews were conducted on-site at the healthcare facilities, and each lasted 45–60 minutes. The interviews were conducted after obtaining an informed consent form

and they were audio recorded with the permission of the participants (Brink et al., 2018). An interview guide outlining the issues to be explored was developed by the research team, and the tool was pilot tested on two participants to refine and improve the quality of the interview questions, and ensure the rigor of the study. The interview guide questions included a qualitative researcher with health informatics expertise. To understand the information needs while providing care at the primary healthcare level, participants were asked to describe their background, experiences of information needs, and types of information frequently needed, as well as sources of information. They were also asked to describe the barriers to accessing the information they needed while providing healthcare services. For each interview question the participants were probed to provide additional details and examples of the issues they pointed out. Field notes were taken during the course of the interview and included in the analysis. From the intended sample size of 21, data saturation was achieved at 15 interviews, with two more interviews performed to ensure data saturation; thus the final sample size was $n=17$.

Qualitative data analysis

Thematic content analysis, as described by Creswell (2014), and the six steps of Braun and Clarke's (2016) qualitative data analysis framework were used to examine, compare, conceptualise and categorise data into themes. First, the audio recordings were transcribed verbatim. The data was coded by being input into the qualitative data analysis software program ATLAS.ti version 8 to establish conceptual relations among words, themes, and subthemes, and to create matching patterns. The coding, themes, and subthemes were developed by the researchers independently, and constant comparison was conducted to ensure that they were grounded in the data. Discrepancies between the researchers' data analysis were resolved through discussion. The researchers read the field notes and transcripts to gain a general understanding of the content. During this process, repeated ideas or patterns of thought were identified and translated through the words and actions of the participants into discernible meanings and themes. In the final step, comparison of concepts was made within a single interview and across the interviews, to ensure the quality of the data and the analysis results. Three themes and eight subthemes emerged from the data, which are discussed in the findings section.

Trustworthiness

The criteria used to ensure trustworthiness were credibility, transferability, dependability, and confirmability (Guba & Lincoln, 1985, cited by Cypress, 2017:256). Purposive sampling ensured that the participants selected for the study could provide detailed information, thus allowing their own words to be cited. Peer debriefing was done through discussions between authors and co-coding was performed. Data collection was pursued until data saturation was achieved to provide a detailed, rich description of the phenomenon (Cypress, 2017:256-258).

Ethical Considerations

Ethical clearance was obtained from the Biomedical Research Ethics Committee of the university (Ref. BM18/3/2). Permission to access the research settings and participants was obtained from the Western Cape Department of Health and primary healthcare facility managers. The privacy and dignity of respondents were respected, and their judgements and opinions remained strictly anonymous. Names and other identifiers were changed to code to protect the privacy of participants. The objectives of and reason for the study were explained to all participants, who provided written consent voluntarily and with full understanding of the implications of taking part in the study. Participants were informed that they had the right to withdraw from the study at any time, and without any consequences. The participants were asked to give informed consent to audiotape the interviews. They were assured that only the researchers could access the data. All hardcopy data and audio recordings will be kept in a locked cupboard for five years. Soft data were transferred to a computer and encrypted with a password. Only the researchers have access to the hard copies and have the password for the electronic documents. Participants were informed that the results of the study would be disseminated.

Findings

The data analysis yielded several formulated meanings and eight subthemes. The following three key themes emerged, that formed the essential structure of the phenomenon: meeting the information needs of professional nurses, information sources and sharing of patient information, and barriers to accessing information (Table1).

Table 1: Themes and subthemes that emerged from the data

Theme	Subtheme
Meeting the information needs of professional nurses	• Professional nurses' information needs
	• The frequency of information needs
Information sources and sharing of patient information	• Digital health information systems available in the health facilities
	• Electronic and printed sources
	• Colleagues utilised as a source of information
	• Information sharing with patients and patient caregivers <ul style="list-style-type: none"> - Information sharing with colleagues - Information sharing between health facilities
Barriers to accessing information	• Organisational barriers to accessing information
	• Personal barriers to accessing information

Theme one: Meeting the information needs of professional nurses

This theme describes meeting the information needs of nurses while providing healthcare delivery. Nurses acknowledge that some patients are well informed about their health conditions due to easy access to health information through the internet. This has encouraged nurses to improve their internet searching skills in order to improve their knowledge and to facilitate health service activities.

Professional nurses' information needs

The findings revealed that nurses needed information related to the diagnosis, but mainly on treatment, health education and management of a patient:

... diagnostic will be last from a nursing point of view, because that is usually done by a doctor, okay, but the main information needed for the care of the patient and the understanding of their illness, depending on the scale of the problem, on their dependency. What can they still do? Are they still mobile? Can they still move about or are they bedridden? (P1)

In terms of immediate needs for information, they usually consult the attending doctor or call the consultant on duty to manage patients that need attention and urgent help:

... for immediate information needs to consult the doctor, because the attending doctor is in the ward always from 8 till 5; the best person to approach is the doctor. (P3)

The frequency of information needs

The participants were asked how many times on average per day they experienced the need for information. The professional nurses explained that the frequency of information needs is usually associated with the type of patient care they are providing, and thus will differ from nurse to nurse. Most professional nurses interviewed revealed that they require information daily to assist them in providing quality healthcare to patients:

... we need patient health and management related information less than 10 [ten times a day] to help the patient. It also depends on what type of patients we are getting, because many times there is proper history for them, but sometimes there is not. Sometimes we get patients that we don't know of, so that is also a problem, [for] which we have to look for the information. (P2).

... there is information needed on an ongoing basis. Every single day, every minute [that] we see a patient, we need information. (P9)

Theme two: Information sources and sharing of patient information

Nurses sought information to help them make decisions and manage patients. In most cases, colleagues were the sources of information, because it is quick and easily accessible to get the information needed from oral sources such as healthcare workers

with more experience. Other information sources are the most recent practice guidelines, although they may not be available in all health facilities. This theme outlines the various sources of information utilised by professional nurses when requiring information or providing information to the patient and patient caregivers.

Digital health information systems available in the health facilities

The professional nurses mentioned using the Department of Health information systems, which include the daily health information tally sheets, the National Health Laboratory System (NHLS) for laboratory results, the Primary Health Care Information System (PHCIS), which is used to make appointments, HIV data (Theo.net), the X-ray information system (Pax system), hospital information systems (Clinicom), and Hospital Emergency Information System (HECTIS), which is the system used by the pharmacy:

We've got theo.net. that is for the HIV data systems. We also have the X-rays as well. It is also now live in the Pax system. So, we don't do hard copies of X-rays anymore. So it goes via the PC and they just punch in the folder number, and there pops up the X-ray results. (P1)

Clinicom – patient clinical information to share between the hospitals and clinics. If a patient is telling me to look if they have an appointment at Tygerberg Hospital, but they are not sure of the date, then I can go onto Clinicom. I can find their folder and check when is their next appointment. (P2)

We've got pharmacy stock control system which is about the medication information, that's available. So, if they go to another facility, and get their information concerning medicine from pharmacy stock control systems. (P8)

The National Department of Health has cell phone applications called Nurse Connect and Mom-Connect. Nurse Connect is a companion to the Mom-Connect programmes, child services and family planning. It offers access to mobile services which target supporting messages and advice via SMS and WhatsApp:

So apparently this is what the doctor explained to me. Nurse Connect is established by the Department of Health for nurses to support each other by using their cell phones. So it appears to be some sort of network between the nurses, that if they need information or they have information needs, they can just message each other. (P3)

Mom-Connect is a useful tool for sending SMS/WhatsApp messages to pregnant women and caregivers of children. The messages are targeted based on the developmental stage of the child. All messages are created with the help of content experts and aligned with National Department of Health communication. (P3)

Participant 11 explains what Mom-Connect is:

The only system that gives patient education that I'm aware of that is directly related to pregnancy is the Mom-Connect, which is a national registry where we register the mothers onto the system with their cell phones. Because it will ask about their last menstrual period. So, they will thereafter receive gestational age-appropriate information or health education every week until the baby is a year old. (P11)

Use of electronic and printed sources of information

Other sources of information used by professional nurses include books, asking other colleagues, guidelines, and policies. Patient records and cell phone applications are also used as sources of information:

So I have apps on my phone. So I would use E-guidance, which is a combination of our emergency guidelines of emergency medicines. It is quite a nice app. I find it very helpful with all patients. (P16)

Colleagues utilised as a source of information

Information sharing with colleagues occurred through consulting with other healthcare providers, meetings, and patient handover:

... with me, if I'm not sure about something, then I use my colleagues. (P15)

I'm more comfortable, I think, with sharing between colleagues, getting their opinions and sort of okay, getting to ... making a decision then. (P4)

Sources used to provide information to the community and patients

The professional nurses share information with the community newspapers, but also through the health committee.

Yes, the other thing how we share information is via our newspapers, and then we've got a communication system and we also got a health committee, so that is also where we share information with the broader community. (P9)

The participants revealed that they have limited availability of pamphlets, but use the media to provide information to patients.

So brochures, flyers – any kind of information to educate a patient. (P12)

We share information via our newspapers ... (P9)

Theme three: Barriers to accessing information

The third objective of this study was to identify the barriers that affected nurses being able to access information for needs that arise at the time of patient care. The participants expressed that there are many difficulties in accessing information sources. The most

common barriers affecting access to information that is needed are organisational and personal barriers.

Organisational barriers to accessing information

The organisational barriers relayed by the participants were restricted access to computer hardware and software, increased workload, time constraints, outdated guideline information, level of care, the postal service, and lack of a telephone. One of the nursing managers expressed that nurses did not have access to a computer, and subsequently were not able to access online information to provide patient care:

As managers, we do have a computer where we can access information, but I think maybe for the staff it is not that easy, because nurses don't have access to a PC to access information. So that is maybe an obstacle that we do have here in this facility. (P13)

At work, there are challenges if you want to get onto the internet. No policies around the use of the internet during patient care. Number one, your workload for the day probably won't allow you to do that, because you are so busy with your patients. (P17)

The adoption of health information was hampered by insufficient information technology infrastructure, due to the lack of finances in resource-limited settings. Participants stressed that at the entry level of care, the budget is less than at the other levels of care. However, should the budget be increased, they would be able to get more computers to provide more efficient care to patients:

I think it could be a financial barrier. How can I explain? Ja (yes). Because I don't know if it is also because of entry-level of care. Yes, we are entry-level of care, but if we get more tools and things to assist us, we might be able to keep the person away from the next level. (P12)

Other participants mentioned that they did not even have a functional telephone system and are still receiving laboratory results via post. This causes a delay in receiving results:

Yes, currently we don't have a proper telephone system that's functional. And it's been like that for many years. So ja, there are a lot of barriers. (P8)

The result that we get of the patient, they bring it with the postman. The man that comes and fetches the blood will drop the blood and will drop the envelope with the results, so sometimes it is a delay. (P13)

Personal barriers to accessing information

Personal factors are very important in the adaptation and use of health information technology to meet nurses' information needs at the primary healthcare level. The personal barriers to accessing information include the attitude of nurses towards the use of technology, the belief that searching for health information reduces nurse-patient

interaction, decreased productivity, lack of training in the use of health technologies, the lack of the provision of data to access the internet, and language barriers:

A lot of our nurses are older, so they might be reluctant to use technology. Searching for information is time-consuming and decreases productivity. (P10)

I mean a lot of nurses don't know how to use a computer. Even some of the managers don't know how to use a computer. (P2)

Another barrier is maybe the staff themselves were not trained, and are still scared of computer technology. (P9)

So for me it is a data issue, because I find that I buy data like probably R100 and R200 a day in all honesty, and that's my data because that's for the Vula app. (P16)

Discussion

Three key themes emerged that formed the essential structure of the phenomenon: information needs of professional nurses, sources of information, and barriers to accessing information.

The study revealed that professional nurses require information every day to assist them in providing quality healthcare to patients. The type of information they mostly required was information about the diagnosis, health education, and management of a patient. A study performed in Malawi that investigated the information behaviour of health professionals found that 50% of the health professionals required information regarding the diagnosis and treatment of diseases to perform their daily tasks (Gama et al., 2022). Similarly, a systematic review performed by Clarke et al. (2016) revealed that the most common information needs found among physicians and nurses were related to diagnoses, drugs, and treatment/therapy.

The literature reveals that professional nurses need daily access to health information. Should professional nurses not have access to health information it could hinder the provision of quality patient care

In this research study, the participants used various sources to obtain information for patient care. In most instances nurses used their colleagues as the main sources of information; particularly those nurses with many years of experience in a specific specialised field were frequently consulted as sources of information. Other sources included the Department of Health information systems, books, colleagues, practice guidelines, policies, and cell phone applications. Sometimes a few of the nurses use their smartphones to search for information on the internet during patient care. However, this is not consistent as they have to buy data in order to be able to do so. Depending on the facility, nurses are allowed to access Clinicom, a hospital information system in the Western Cape, where nurses access patient information recorded across hospitals. This

is an important development to assist nurses in tracking patients' previous medical history and managing patients easily. This concurs with the study performed by Gama et al. (2022), where it was found that 78% of the HCPs used books, 59% used colleagues, 54% used websites, 50% used journal articles, and 47% used medical databases. Similarly, a study performed in Nigeria to determine the information needs and information-seeking behaviours of frontline healthcare workers found that the major sources of information they used are medical records, textbooks, and the internet (Madukwe & Osonwa, 2021).

In this study, nurses did not use research articles or health databases as a source of evidence-based health information. Nurses use patient records as a daily source of information to help them make decisions about patient care or to answer some routine patient-related questions. In instances where nurses cannot solve a problem using the sources at hand, they then consult a physician or pharmacist. The professional nurses believed that accessing information through the multidisciplinary team or knowledgeable colleagues is convenient and reduces the time that it would take to search from books or other sources. Although it is quicker and easier to use colleagues as common sources of information, there is little engagement in using current evidence-based information to improve their knowledge and patient-caring skills. The information provided by colleagues may not be correct or not the most updated information. Consequently, using colleagues as a source of information may potentially influence the patient care.

The professional nurses shared information with the community and patients through community newspapers, and also through the community health committee's monthly meetings. A mode used to share information with patients was pamphlets, but the participants revealed that they had limited availability of pamphlets. The PHCIS consists of data sources and health information for clinical services, such as promotive, preventive, curative, and rehabilitation services (Afrizal et al., 2019). Health information sharing is a critical factor in healthcare, and many nurses use the institutional guidelines to share patient information among healthcare workers (Abuhammad et al., 2020). Nurses also shared patient information during the handover of patients from one nurse to the next, to ensure continuity of care. Handover is the most frequent and common method in the information-sharing process between healthcare providers (Eggs & Slade, 2015). The Department of Health has developed different software application as part of digitalising the health systems, such as the Vula app, which is used to share patient information during patient referral, and Pax, which is used to share X-ray results. Mom-Connect is an app used to support pregnant women in South Africa. Currently more than 800 women are receiving Mom-Connect messages, and more than two million pregnant women have used this system since its inception in South Africa (Barr et al., 2020).

This study reveals that multiple health information systems and software applications are available in primary healthcare facilities. These sources of information not only

facilitate access to health information, but will also ensure the provision of quality patient care. Organisational and personal factors were barriers to accessing information. Organisational barriers were restricted access to computer hardware and software, access to internet technology, increased workload, outdated information, and financial barriers, which continue, with the use of the traditional postal service and the telephone for communicating. Personal barriers were the attitude of nurses towards technology, lack of training, fear of technology, incompetence, financial barriers, need to enable free data to access information at work, and language barriers.

In a literature review conducted on nurses and internet health-related information, the main barriers reported by nurses related to seeking internet information, being too busy to search the internet, difficulties in searching for reliable information because of skills deficiency, and lack of access to computers (Ahmad et al., 2018). Odekunle et al. (2017) found that many factors limit adoption of the use of electronic health records in sub-Saharan Africa. These include high initial costs of procurement of computer systems and ongoing maintenance costs, lack of financial incentives for adoption, lack of priorities, poor electricity supply, lack of internet connectivity, primary user's limited computer skills, and lack of healthcare infrastructure (Odekunle et al., 2017). In addition, Kleib and Nagle (2018) identified challenges related to the quality of informatics training, age of the nurses, work setting, educational level, and the ability to use technology in patient care. In a study performed in Cape Town, the authors found that although most respondents reported being skilled in using electronic health records in primary healthcare, better computer accessibility and continuous training are important ongoing requirements (Tengeh & Bimerew, 2022).

Strengths and limitations

The exploratory and descriptive qualitative research design of this study allowed in-depth interviews to be performed to extract explicit and meaningful data from the participants. Purposive sampling ensured that participants who had the most information to share on the phenomenon were selected. However, the study does not represent the experiences of professional nurses from all ethnic groups in the Western Cape Province. In the geographical area of the selected facilities, the population is mainly of the mixed-race ethnic group and the black ethnic group. Hence participants from the white and Indian ethnic groups were not part of this study.

Implications and recommendations

Despite multiple health information systems and software applications being available for primary healthcare facilities, organisational and personal barriers hamper access to the sources of information. The most prevalent barriers are access to computers due to financial constraints and computer incompetence because of inadequate training or the reluctance of older generations to be trained.

The study recommends providing in-service training on digital health for all professional nurses, including how to search for evidence-based information from health databases. Nursing informatics could be incorporated into all nursing training curricula. All primary healthcare facilities should provide nurses with access to computer technology and have free Wi-Fi, to allow access to software applications. Patient health information pamphlets should be made available to all facilities and be printed in the most common language used in the geographical area. This will ensure that despite language barriers, professional nurses could still provide patient information.

Conclusion

The findings reveal that professional nurses require information every day to provide nursing care. Various health information systems are available, but not all professional nurses have access to a computer or are computer literate. The professional nurses who are computer literate and had access to a computer revealed that their workload did not allow them time to access the electronic information. Software applications are also available to access information, but free Wi-Fi is not available in the primary healthcare facilities – hence access is limited as professional nurses must use their own data. Consequently, the professional nurses relied on colleagues and printed media as a source of information, which may not always be reliable. The participants also shared information with the community and patients through the monthly health committee meetings, newspapers, and pamphlets. However, pamphlets were not always available within the facilities. Occasionally language barriers hindered professional nurses in providing information to patients.

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Competing interests

The authors declare that they have no financial or personal relationships which may have inappropriately influenced them in writing this article.

Authors' contributions

MB: Conceptualising and conducting the study, data analysis, writing and original draft preparation; AR: data analysis, reviewing and writing the manuscript; DKM: Data analysis review. All authors contributed to the manuscript writing.

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Data availability

Data sharing is not publicly applicable, as the data is the property of the University of the Western Cape. However, data may be available from the authors on request.

Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of any affiliated agency of the authors.

References

- Abuhammad, S., Alzoubi, K. H., Al-Azzam, S. I., & Karasneh, R. A. (2020). Knowledge and practice of patient data sharing and confidentiality among nurses in Jordan. *Journal of Multidisciplinary Healthcare, Volume 1*, 935-942.
- Afrizal, S. H., Handayani, P. W., Hidayanto, A. N., Eryando, T., Budiharsana, M., & Martha, E. (2019). Barriers and Challenges to Primary Health Care Information System (PHCIS) adoption from a health management perspective: A qualitative study. *Informatics in Medicine Unlocked, 17*, 100198.
- Ahmad, M. M., Musallam, R., & Allah, A. H. (2018). Nurses and internet health-related information: review on access and utility. *Clujul Medical, 91*(3), 266.
- Barr-Walker, J. (2017). Evidence-based information needs of public health workers: a systematized review. *Journal of the Medical Library Association, 105*(1). Retrieved from <http://apps.who.int/iris/handle/10665/173270>.
- Braun, V., & Clarke, V. (2016). (Mis) conceptualizing themes, thematic analysis, and other problems with Fugard and Potts' (2015) sample-size tool for thematic analysis. *International Journal of Social Research Methodology, 19*(6), 739-743.
- Brink, H., van der Walt, C., & van Rensburg, G. (2018). *Fundamentals of Research Methodology For Healthcare Professionals*. 4th ed. Juta & Company Ltd.

- Burns, N., & Grove, S. K. (2009). *The practice of nursing research: appraisal, synthesis, and generation of evidence*. Saunders/Elsevier.
- Clarke, M. A., Moore, J. L., Steege, L. M., Koopman, R. J., Belden, J. L., Canfield, S. M., ... & Kim, M. S. (2016). Health information needs, sources, and barriers of primary care patients to achieve patient-centered care: A literature review. *Health Informatics Journal*, 22(4), 992-1016.
- Clarke, V., & Braun, V. (2013). Teaching thematic analysis: Overcoming challenges and developing strategies for effective learning. *The Psychologist*, 26(2), 120-123.
- Cohen, D. J., Wyte-Lake, T., Dorr, D. A., Gold, R., Holden, R. J., Koopman, R. J., ... & Warren, N. (2020). Unmet information needs of clinical teams delivering care to complex patients and design strategies to address those needs. *Journal of the American Medical Informatics Association*, 27(5), 690-699.
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches* (4th ed). Sage Publications.
- Cypress, B.S. (2017). Rigor or Reliability and Validity in Qualitative Research: Perspectives, Strategies, Reconceptualization, and Recommendations. *Dimensions of Critical Care Nursing* 36(4), 253-263. <https://doi.org/10.1097/DCC.0000000000000253>
- Eggs, S., & Slade, D. (2015). Communication in clinical handover: improving the safety and quality of the patient experience. *Journal of Public Health Research*, 4(3), jphr-2015.
- Erick, M., & Kasamani, B. S. (2015). Afya App – the mobile personal health management platform. *International Journal of Research Studies in Science, Engineering and Technology* Volume 2, Issue 1, January 2015, PP 58-71
- Fourie, I., & Bakker, S. (2016). Exploring information needs and information behaviour in oncology contexts: the importance of tasks, roles and organizational settings. https://www.researchgate.net/profile/Ina-Fourie/publication/43511551_.pdf Date of access: 9 July 2023.
- Fossum, M., Opsal, A. & Ehrenberg, A. (2021). Nurses' sources of information to inform clinical practice: An integrative review to guide evidence-based practice. *Worldviews on Evidence-Based Nursing*, 19, 372-379. <https://doi.org/10.1111/wvn.12569>
- Gray, J., Grove, S., & Sutherland, S. (2017). *Burns and Grove's the practice of nursing research: Appraisal, synthesis, and generation of evidence*. (8th ed.). Elsevier, INC.
- Gaughan, M. R., Kwon, M., Park, E., & Jungquist, C. (2022). Nurses' experience and perception of technology use in practice: A qualitative study using an extended technology acceptance model. *Computers, Informatics, Nursing*, 40(7), 478-486. <https://doi.org/10.1097/CIN.0000000000000850>

- Gama, L. C., Chwinga, W. D., & Chipeta, G. T. (2022). Information needs and sources of health professionals in Malawi. *Health Information and Libraries Journal*. <https://doi.org/10.1111/hir.12507>
- Jahan, R., Zou, P., Huang, Y., & Jibb, L. (2020). Impact of MomConnect Program in South Africa: A Narrative Review. *Online Journal of Nursing Informatics*. <https://www.himss.org/resources/impact-momconnect-program-south-africa-narrative-review> Date of access: 23 October 2023.
- Kleib, M., & Nagle, L. (2018). Factors associated with Canadian nurses' informatics competency. *Computers, Informatics, Nursing*, 36(8), 406-415. <https://doi.org/10.1097/CIN.0000000000000434>
- Kostagiolas, P. A., Kourouthanassis, P. E., Martzoukou, K., Korfiatis, N., & Niakas, D. (2018). Information seeking behavioural paths of physicians for diabetes mellitus care: A qualitative comparative analysis of information needs, sources, and barriers. *Health Systems*, 7(1), 13-28.
- Koumamba, A. P., Bisvigou, U. J., Ngoungou, E. B., & Diallo, G. (2021). Health information systems in developing countries: case of African countries. *BMC Medical Informatics and Decision Making*, 21, 1-10.
- March, M. A., Vaikosen, H. A., & Akporoghene, E. A. (2020). Information needs and seeking behaviour of nurses at Rivers State University Teaching Hospital (RSUTH), port-Harcourt. *Journal of Information and Knowledge Management*, 11(3), 63-74. <https://doi.org/10.4314/ijikm.v11i3.7>.
- Madukwe, A. I., & Osonwa, J. O. (2021). Information needs and seeking behaviours of communal frontline health workers in Anambra State. *Library Philosophy and Practice*, 1A-20. <https://digitalcommons.unl.edu/libphilprac/5686>
- Odekunle, F. F., Odekunle, R. O., & Shankar, S. (2017). Why sub-Saharan Africa lags in electronic health record adoption and possible strategies to increase its adoption in this region. *International Journal of Health Sciences*, 11(4), 59.
- Polit, D., & Beck, C. (2018). *Essentials of Nursing Research: Appraising Evidence for Nursing Practice*. Lippincott Williams & Wilkins.
- Prakasan, P. M. (2013). Information Needs and Use of Healthcare Professionals: International Perspective. *Journal of Library & Information Technology*, 33(6), 465-473.
- Razak, S., Bai, S., Zakaria, F., Ali, M., Rashmi, F. N. U., Sulaiman, R., Jangda, A.A., Tyagi, A., Nima, F., & Rizvi, S. A. H. (2022). Information seeking practices and availability of smart devices among healthcare professionals in a Lower-Middle-Income Country: An analysis from Pakistan. *Cureus*, 14(10).
- Snäll, L. (2022). Digital Health Strategies for the Future: Global, European and National Level Strategies. Accessed on 18July from <https://urn.fi/URN:NBN:fi:amk-2022090920020>

- Tengeh L. N., & Bimerew, M. (2022). Primary healthcare nurses' perceptions about their ability to utilise electronic health records. *Obzornik zdravstvene nege*, 56(3), pp. 176–183.
- Thimbleby, H. (2023). Technology and the future of healthcare. *Journal of Public Health Research*, 2, e28
- Turner, A. M., Stavri, Z., Revere, D., & Altamore, R. (2014). From the ground up: information needs of nurses in a rural public health department in Oregon. *Journal of the Medical Library Association*. <https://doi.org/10.3163/1536-5050.96.4.008>
- World Health Organization. (2021). Digital Health and Innovation. Governance. <https://www.who.int/teams/digital-health-and-innovation/governance> Date of access: 15 February 2023